STANDARD HINGEBELT CONVEYOR PARTS AND SERVICE MANUAL

Thank you for choosing a LNS Chip Conveyor. We are proud to have you among our LNS family of users.

LNS Chip Conveyors simply and reliably remove waste from machining operations. Machine efficiency is increased and operator safety is improved since the conveyors work with little operator attention and without interrupting production time. TURBO Conveyors are available for many types of machine tools or other applications. They can be arranged to deliver wet or dry waste to containers or to conveyor or chute-type disposal systems. For further information, contact:

Sales Department
TURBO SYSTEMS INCORPORATED
203 Turbo Drive
Kings Mountains, NC 28086

This Service Manual is intended to assist with the normal maintenance that will assure long service life of your LNS Chip Conveyor. It is in two parts – a Service Instruction Section, followed by a Parts Section, which includes drawings and parts lists for the basic elements of the conveyors.

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NOTICE

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INSTRUCTIONS FOR ORDERING PARTS

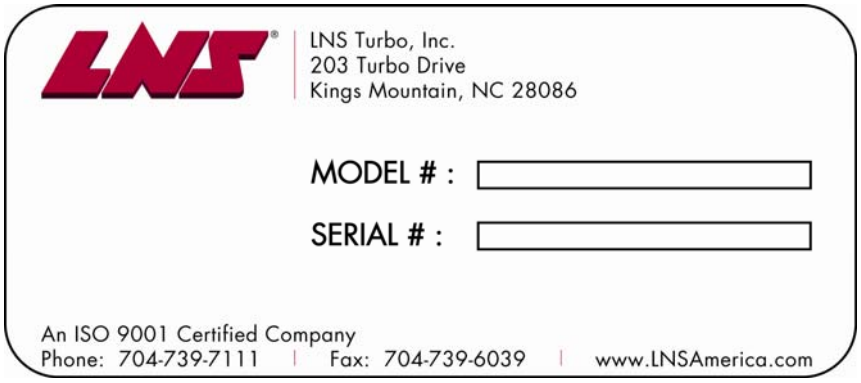
FURNISH THE FOLLOWING INFORMATION ON YOUR ORDER:

- MODEL AND SERIAL NO. OF MACHINE
- CATALOG NUMBER AND NAME OF PART
- QUANTITY REQUIRED
- PURCHASE ORDER NUMBER
- BILL TO ADDRESS

FURNISH EXACT SHIPPING INSTRUCTIONS:

- COMPLETE SHIPPING ADDRESS
- MODE OF DELIVERY
- PARCEL POST, TRUCK LINE, ETC

HOW TO FIND THE MODEL AND SERIAL NUMBER OF YOUR MACHINE:
The machine model number and serial number is stamped on the machine nameplate located on the motor cover.



DIRECT YOUR ORDER TO:

LNS Turbo
203 Turbo Drive
Kings Mountains, NC 28086 U.S.A.
Telephone: (704) 739-7111 Fax: (704) 739-6039

WARRANTY

LNS conveyors carry a warranty against defective material or workmanship during manufacture of the conveyor for one year in service or eighteen months from shipment, which ever occurs first. LNS will repair or replace, at its option, free of charge except freight, FOB shipping point, any parts it finds nonconforming on these conditions:

a. on request, user promptly allows LNS to inspect, and user returns all requested parts to LNS' plant, and
b. user has operated and maintained products in accordance with LNS' maintenance and operational literature and good business practice has been used; and
c. products have not been misused, abused, damaged by accident or altered without LNS' written consent; and
d. user employs trained maintenance and operating personnel; and
e. buyer meets all payment obligations;

Parts, which have expected life shorter than one year under normal usage, are excluded.

USED PRODUCTS ARE SOLD AS IS UNLESS OTHERWISE AGREED UPON AT THE TIME OF PURCHASE. SELLER MAKES NO WARRANTY FOR USED PRODUCTS EXCEPT AS TO TITLE. BUYER MAY INSPECT AND TEST BEFORE SHIPMENT AND ACCEPTS USED PRODUCTS ON THESE TERMS.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL, OR IMPLIED, (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.)

INSTALLATION AND STARTUP

Your LNS Conveyor has been run prior to shipment to insure proper operation. However, it is recommended that the following checks be made before startup:

Conveyor Drive
Check frame and belt for damage during shipment or storage.
Locate conveyor in operating position.
All drive elements (pulleys and sprockets) should be located close to their bearing supports. Each set of pulleys and sprockets should be carefully aligned to prevent excessive wear and noise.
Drive chains and belts should be properly tensioned.
Check speed reducer to see that oil is at proper level. If there is a shipping plug in gearbox vent, remove it.

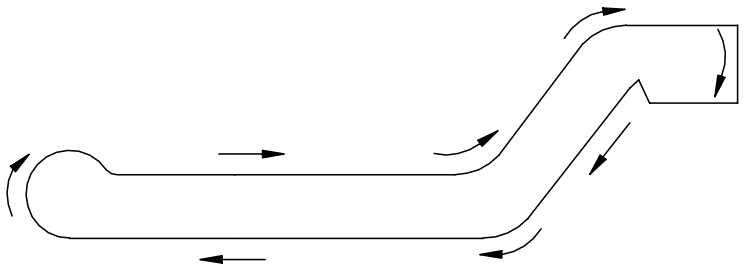
Leveling
Level should be placed across tail section and on bottom cover at discharge, perpendicular to travel of the belt. Adjust conveyor support leg, if so equipped, or shim as necessary to level.

Electrical Controls
If conveyor is supplied with electrical controls, check voltage of system supplied to be sure it matches with that to be used. Read the Electrical Controls section in this manual for more details before installing the conveyor.

A qualified electrician in accordance with local codes must connect electrical equipment to power source. If conveyor power source is basic machine, refer to basic machine manufacturers wiring diagram.

DO NOT DRILL HOLES IN CONVEYOR FRAME TO MOUNT POWER BOXES OR ACCESSORIES WITHOUT FIRST CONSULTING LNS.

Arrows show **forward** movement of belt on a **hinged belt** conveyor. The normal belt direction is **opposite** of arrows on a **drag link** conveyor.



DISCHARGE

CAUTION !

ALWAYS DISCONNECT POWER TO THE CONVEYOR BEFORE ATTEMPTING ANY MAINTENANCE PROCEDURES.

LUBRICATION AND ROUTINE MAINTENANCE

After First 100 Hours of Operation and at regularly scheduled intervals to suit operating conditions:

Check belt, wipers for excessive wear.
Inspect conveyor belt parts for excessive wear. If excessive wear is noted, belt should be removed and repaired. (Refer to service section for belt removal instructions).
Change oil in speed reducer (if applicable). Use any brand 90-wt. gear oil.
Grease pillow block bearings, using grease gun. Do not grease too often – bearing seals could be damaged.
Check belt tension (see page 6).
Oil drive chains.

CAUTION !

ALWAYS DISCONNECT POWER TO CONVEYOR BEFORE ATTEMPTING ANY MAINTENANCE PROCEDURES.

CLUTCH OPERATION AND ADJUSTMENT

A ball and detent clutch protects the conveyor drive unit from damage in case of jamming or overload. The clutch is preset at factory.

Clutch Adjustment
The clutch should not require any adjustment when working under normal machining operations. If a problem occurs refer to the Trouble Shooting Section on page 14 of this manual.

Please contact LNS' Service Department before adjusting the clutch setting. If the clutch adjustment is too tight, the clutch will not function as a safeguard for the motor. This situation can cause damage to the drive motor and/or the conveyor frame.

Please fill in the blanks below with the conveyor model and serial number for your reference.

CAUTION !

If clutch adjustment is too tight, clutch will not function as a safeguard for the motor.

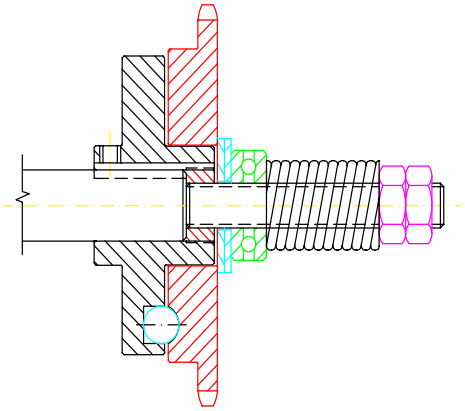
MODEL NO. _____

SERIAL NO. _____

THE COMPRESSION SPRING IS PRESET AT THE FACTORY.
CONTACT LNS BEFORE MAKING ANY ADJUSTMENT.

LNS CONVEYOR TORQUE LIMITING CLUTCH

Clutch shown here has a single spring. Your conveyor clutch spring quantity may vary.

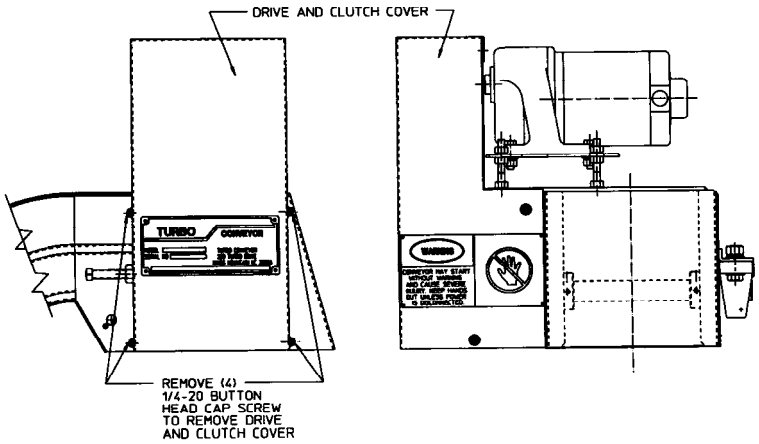


SERVICE SECTION

Most smaller assemblies of the conveyor, such as the drive and safety clutch, can be disassembled by careful reference to the parts drawings on the pages that follow. However, the belt and related parts can be removed by following the sequence described below. Refer to the Part Section in this manual for belt part designation/catalog number.

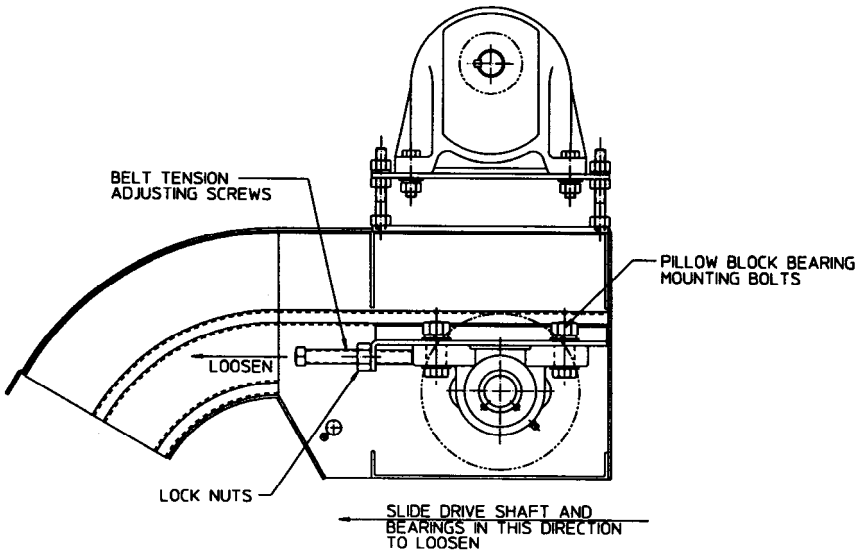
HINGE BELT REMOVAL AND INSTALLATION INSTRUCTIONS

1. Disconnect power to the conveyor before performing any work on the belt.
2. Remove the cover over the clutch and drive chain.



REMOVE DRIVE AND CLUTCH COVER

3. Take the master link out of the roller drive chain between the clutch and motor and remove the chain.
4. Loosen the lock nuts on the belt tension adjusting screws (located just behind each of the pillow block bearings on the drive shaft) and back off the adjusting screws until they are flush with the face of the adjusting bracket.
5. Loosen the two bolts holding each pillow block bearing.
6. Slide the drive shaft toward the tail of the conveyor as far as the adjusting slots for the pillow block bearings will allow. This will provide maximum slack in the belt.



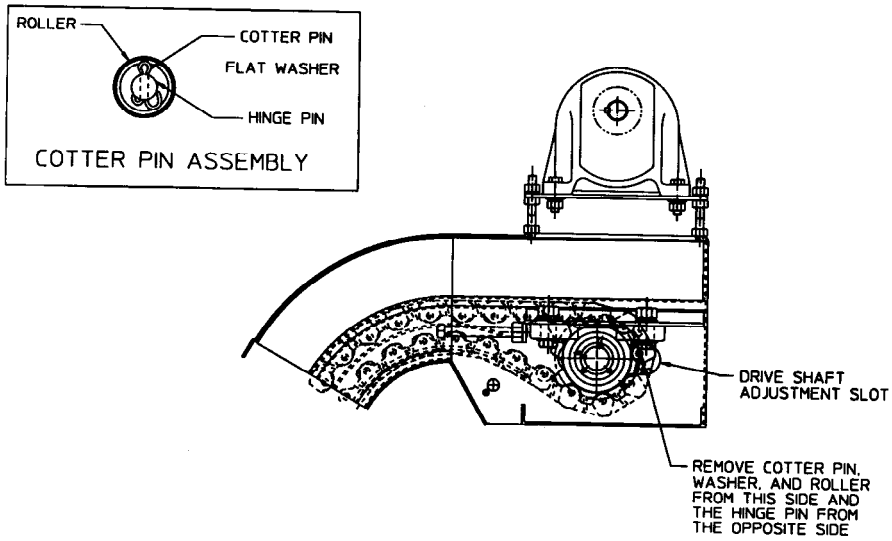
LOOSEN DRIVE SHAFT

BELTREP2

7. Working through the drive shaft adjustment slot, remove the cotter pin from one of the belt hinge pins on the end of the pin nearest the clutch.

   NOTE: Some conveyor belt designs have headed link pins. If the head of the link pin is on the clutch side of the conveyor, the clutch must be removed before the headed pin can be removed through the drive shaft adjustment slot. The clutch assembly can be removed by loosening two set-screws that secure it to the drive shaft. When reinstalling the clutch make sure to apply suitable Locktite product, which is normally used for fasteners, on the set-screws before re-assembly. (Follow the manufacturer's instructions for applying Locktite.

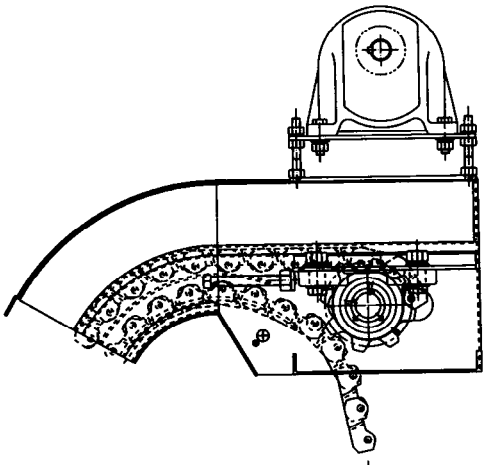
8. Being careful to catch the flat washer and roller, pull the hinge pin out through the adjustment slot on the side opposite the clutch. The hinge pin cannot be removed from the clutch side because it won't clear the clutch````` sprocket.



HINGE PIN REMOVAL

BELTREP3

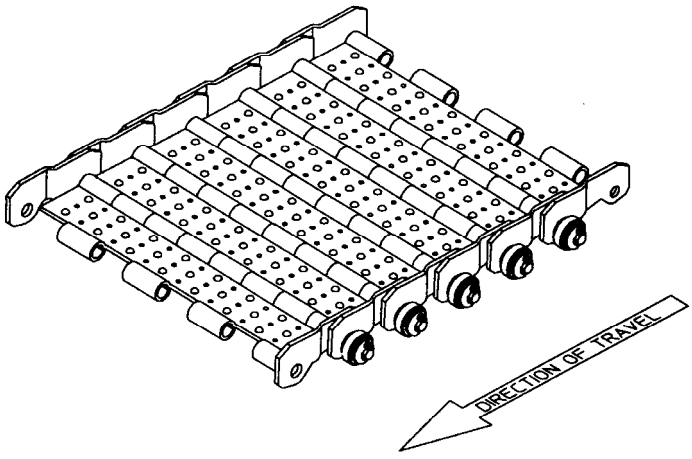
9. Grasp the end of belt below the drive shaft and pull the belt out of the conveyor. Be sure to wear gloves to avoid being cut by sharp edges on the belt. When only a few feet of belt remain in the conveyor, the belt on the floor will have enough weight to begin pulling the remainder out on it's own. As the last of the belt begins to run out faster, don't attempt to stop it; just stand clear and let it run out onto the floor. Note that the belt was moved in the direction opposite normal belt travel.



HINGE BELT REMOVAL

BELTREP4

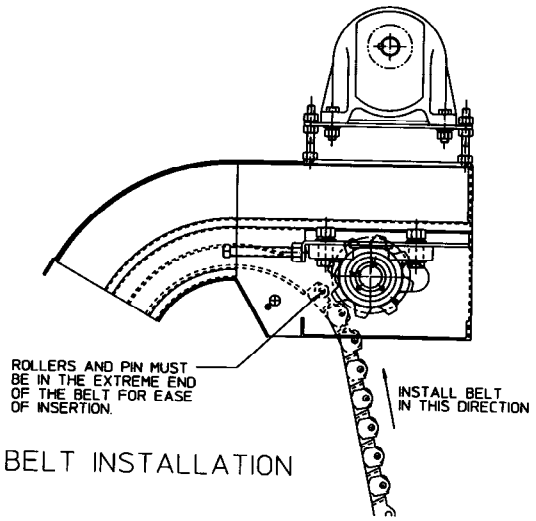
10. Before moving the old belt out of the way, pay particular attention to the way the side wings overlap. When the belt is running in the normal direction of travel, the leading ends of the side wings are outboard, and the trailing ends are inboard.



11. Place the new belt on the floor beneath the conveyor discharge, being careful to orient it in the same direction as the old one that was removed.

12. If there is not already a hinge pin in the end of the belt, use the pin and rollers that were removed to separate the old belt. There must be a pin and rollers in the extreme end of the belt for ease of insertion.

13. With a person standing on either side of the belt, lift up the lead end and start it in the lower track, from which the old belt was pulled out. Be sure and wear gloves to prevent injury, and be sure to maintain a secure hold on the belt until at least five feet have been fed into the conveyor frame. At this point, the weight of the belt inside the frame should be enough to prevent it running back out on it's own.



HINGE BELT INSTALLATION

14. Continue feeding the belt into the conveyor frame. One person may have to use a length of 2 x 4 or a pry bar to "help" it along from time to time. Force should not be required. Many times the belt can be pushed in all the way around from the discharge end. If the belt hangs up, look for some obstruction; don't force it.
15. When the lead end of the belt reaches the drive shaft, carefully feed it up over the drive sprockets.
16. Remove the hinge pin and rollers that were used to help guide the belt through the track.
17. With the ends of the belt engaged in the teeth around the top and bottom of the drive sprockets, the two ends should join. At this point, it may be necessary to remove one or more hinge plates from the new belt. Most new belts are supplied longer than necessary.
18. Reverse steps 1 through 7.
19. When adjusting belt tension, clamp a pair of vise grip pliers on one of the formed cleats on the belt. Use the vise grips to "rock" the belt back and forth to feel the slack and drag on the belt. There should not be more than enough slack to allow rocking the drive shaft through 15 degrees of rotation without moving the belt. On a new belt, zero slack is O.K., but if the belt is difficult to move with the vise grips, it's too tight. Correctly adjusted, it should be possible, if difficult, to move the belt with one's gloved hands by turning the clutch sprocket.

20. Visually confirm the belt is located in the center of the frame. Adjust if necessary by loosening the setscrews in the pillow block bearings and shifting the drive shaft; clutch and all; to the left or right as appropriate.

21. Re-connect power and test run the conveyor. The belt should run freely and the only sound should be a subdued clicking as each hinge plate passes over the drive sprocket.

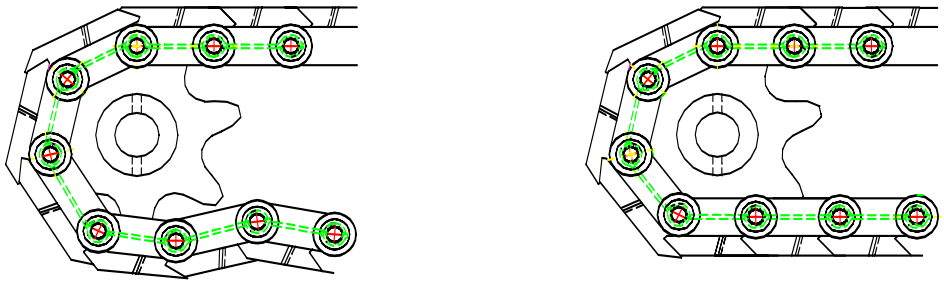
WARNING !
Hinge plates can pinch hands and fingers.

CONVEYOR BELT TENSIONING

Correct conveyor belt tension is essential to ensure proper operation and extended life of conveyor components. The belt has been properly tensioned during factory assembly. As normal wear occurs the belt may become slack and need adjustment.

The following factors may be used to determine if the belt needs adjustment.

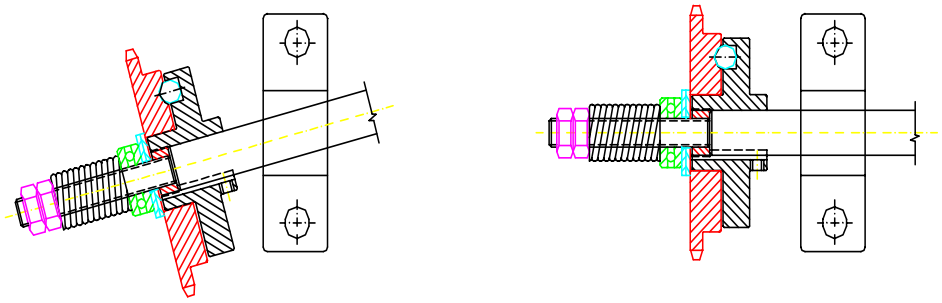
- Belt Too Loose: Belt Slack at exit point of the drive sprocket before re-entry into frame. (See fig. 1).
- Belt Too Tight: Belt has intermittent jerks and a popping sound while conveyor is in operation.
- Uneven Tension (side to side): (1) Belt tends to track to one side (2) Excessive wear on outside of side wings.



INCORRECT **CORRECT**

FIG. 1

Check to see that clutch body (75A-50) is square to the bearing-mounting bracket. (See Fig.2). If it is not, this will generally indicate which direction the belt is off on side to side tension.



INCORRECT **CORRECT**

FIG. 2

Once it is determined that retensioning of the belt is necessary, the following procedure should be followed:

Instructions for Checking Conveyor Belt Tension

1. Position belt with a link pin directly below the conveyor drive shaft.
2. Hold a straightedge across the bottom of the conveyor discharge at the very rear.
3. Using a 6-inch scale, measure vertically from the straightedge up to the underside of the belt.
4. Push up on the underside of the belt and repeat the measurement as in step 3.
5. Under the force applied by the average worker, the measurement in step 4 should be approximately 1/16 inch (1.5mm) greater than the measurement in step 3.

BELT TENSIONING PROCEDURE

1. Install belt as stated in Parts and Service Manual on page 5, except do not install drive chain or tension belt. (Drive chain and preload exaggerates and/or alters torque reading.
2. Tighten pillow block bearing bolts, then loosen five (5) ¼ turns. (This step ensures that bearing is parallel to bearing mount surface, and that lockwasher is not adding additional torque to reading.)
3. Set torque wrench to 25 inch pounds. Tighten each bearing adjusting bolt alternately until 25 inch pounds is obtained and torque wrench no longer turns adjusting bolt, but clicks at rotation.
4. Manually rotate belt back and forth. (This distributes tension evenly throughout belt.)
5. Repeat steps (3) and (4) until belt rotation no longer results in decreased torque setting. (This step ensures that both sides of belt are tensioned equally.) Lock adjusting bolts.
6. Run machine for (2) hour break-in period.
7. Remove drive chain. Loosen adjusting bolt locknuts. Loosen bearing bolts as noted in step (2). Repeat steps (3), (4) and (5). The belt must be retorqued to obtain correct tension after break in period (see guide below).

NOTE: Belts with discharge heights in excess of 50" or load length in excess of 8 ft. may require higher torque settings. Contact LNS if assistance is needed.

TORQUE GUIDE

Overall Length to 225"……25 in. lbs.
Overall Length 225" to 375"……35 in. lbs.
Overall Length 375" and over ……45 in. lbs.

NOTE: Material use, application and incline angle can affect required torque settings. Drag link type conveyors may also experience torque variances due to conveyor length and chip loads.

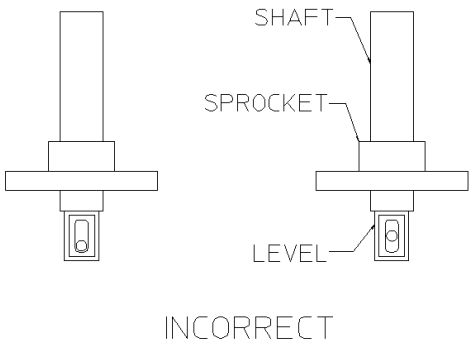
CAUTION !

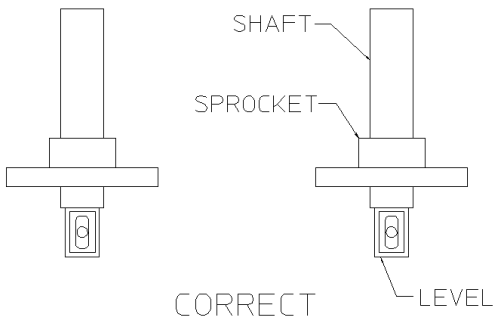
ALWAYS DISCONNECT POWER TO CONVEYOR BEFORE ATTEMPTING ANY MAINTENANCE PROCEDURES.

MOTOR AND DRIVE SHAFT & SPROCKET ALIGNMENT

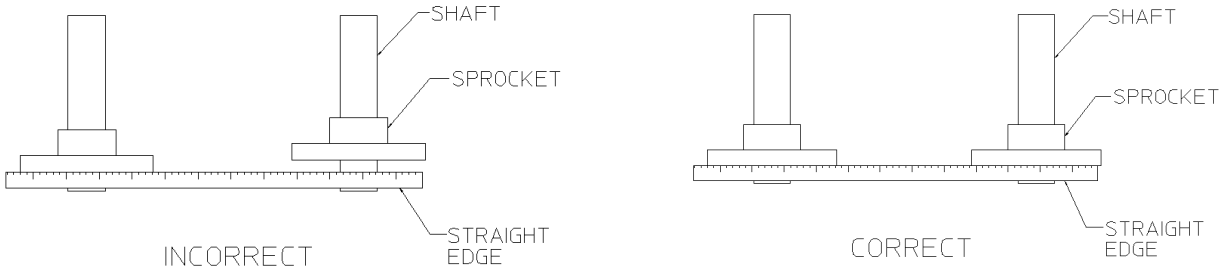
Proper alignment of sprockets and shafts are essential for smooth operation of conveyors and long lasting service of the conveyor chain and the drive chain. To ensure correct alignment, follow these steps.

1. Level the motor and drive shaft using a level.





2. Align the motor and drive shaft for parallelism using a straight edge or a scale. The sprocket should be parallel to the shaft within +/- 1 mm.



3. Align the motor sprocket with the clutch or drive sprocket axially on the shafts using a straight bar, straightedge or stretched wire as illustrated below. Centering accuracy should be within 2 mm.

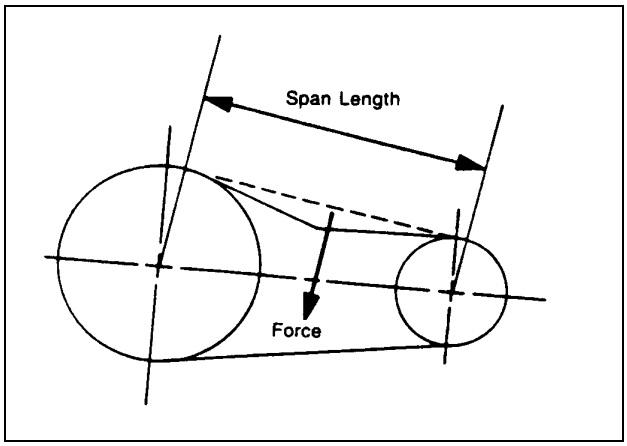
DRIVE CHAIN TENSION

Proper Tension for the drive chain is extremely important because:

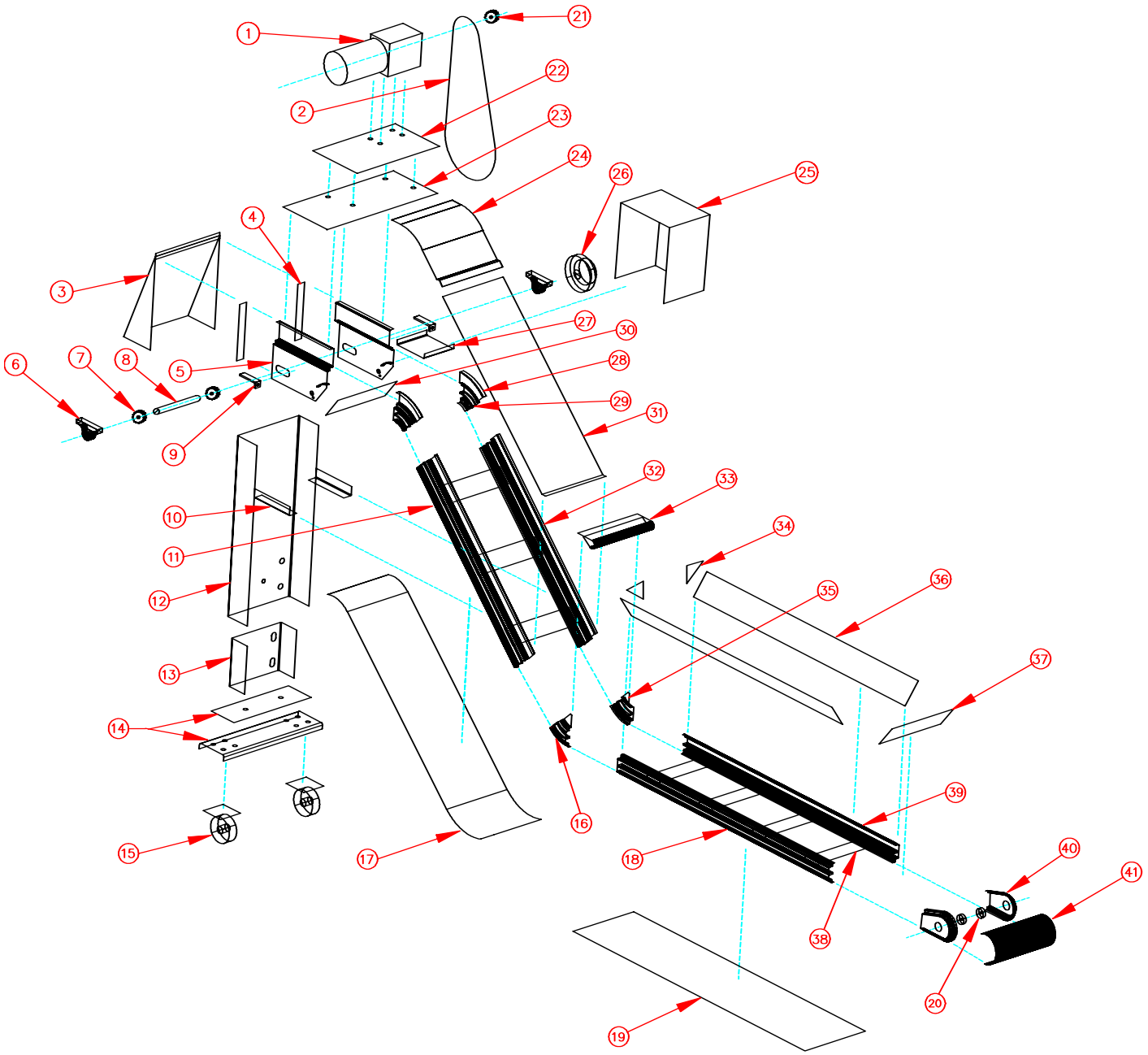
1. When the chain is too tight, the additional load results in faster wear on the chain joints, sprocket teeth and shaft bearings.
2. When the chain is too slack, vibration could cause excessive chain wear, noise or shock loading.

For most horizontal and incline drives, the chain should be installed with an amount of sag in the unloaded span amounting to about 2 percent of the sprocket center distance length. Sag, then, becomes the measure of chain tension. For example if the span length between the sprocket centerlines, as shown below, are 18" then the sag should be 3/8" if the belt is tensioned correctly.

To measure the actual amount of sag, one side of the chain should be pulled up tight, allowing all of the excess chain to accumulate in the opposite span. A straight edge over the sprockets and a scale can be used to measure the sag. The chain tension should be checked on a regular basis and adjustments made as necessary.



CONVEYOR TERMINOLOGY



CONVEYOR TERMINOLOGY
(CONTINUED)

1 GEAR MOTOR
2 DRIVE CHAIN
3 HINGED DISCHARGE FILLER
4 DISCHARGE PLATE
5 DISCHARGE PLATE
6 BEARING (2)
7 DRIVE SPROCKET (2)
8 DRIVE SHAFT
9 BEARING MOUNT (2)
10 LEG BRACE LH
11 SIDE PLATE INCLINE LH
12 LEG
13 LEG EXTENSION
14 FOOT PLATE OR CASTER PLATE (OPTIONAL)
15 CASTER (2)
16 TOP COVER SUPPORT LOWER CURVE (2)
17 BOTTOM COVER INCLINE
18 SIDE PLATE LOAD LH
19 BOTTOM COVER LOAD
20 TAIL DISC (2)
21 HUB SPROCKET
22 MOTOR ADAPTER PLATE
23 MOTOR MOUNTING PLATE
24 TOP COVER UPPER CURVE
25 DRIVE COVER
26 DRIVE COVER
27 CLUTCH ASSEMBLY
28 FLANGE (2)
29 TOP COVER SUPPORT UPPER CURVE (2)
30 FRAME SUPPORT DISCHARGE
31 TOP COVER INCLINE
32 SIDE PLATE INCLINE RH
33 CHIP SUPPRESSOR
34 GUSSET @ CHIP SUPPRESSOR (2)
35 LOWER CURVE (2)
36 LOAD BAFFLE RH
37 TAIL BAFFLE
38 CROSS TIE BAR
39 SIDE PLATE LOAD RH
40 SIDE PLATE TAIL (2)
41 TAIL END COVER

TROUBLE SHOOTING

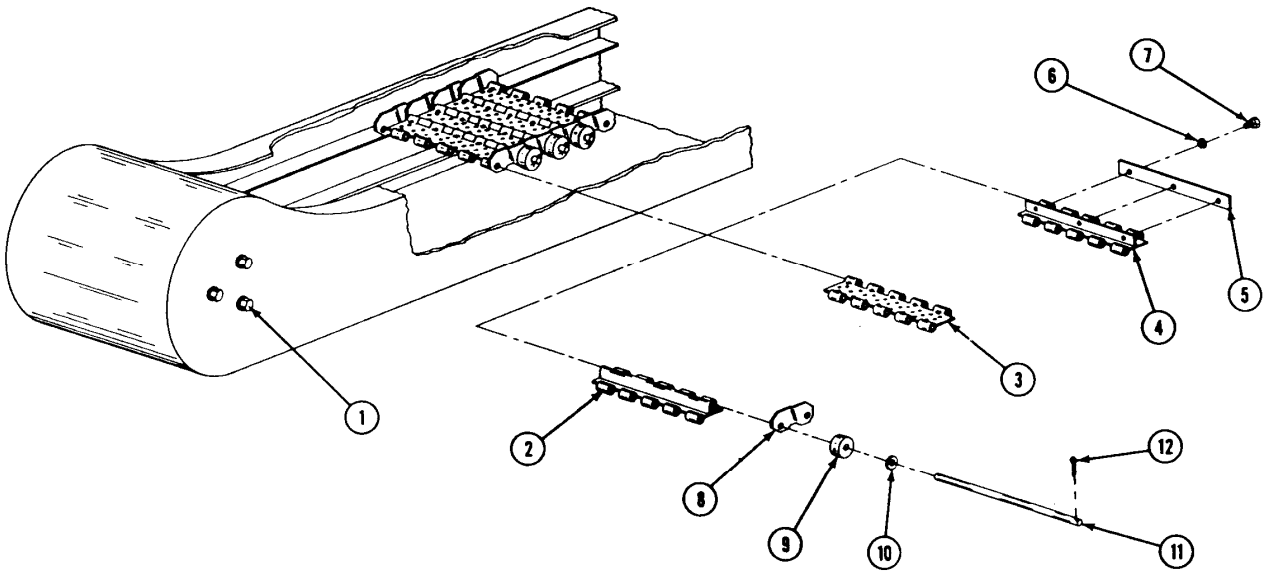
The following chart will show some problems and their probable causes and possible solutions.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Conveyor stall clutch slips	(1) Chip jam	Let clutch slip for ten to fifteen seconds, this will often clear jam. (Do not let clutch slip for extended period of time.) If jam does not clear with above procedure, run conveyor in reverse no more than 4 to 6 inches. Start conveyor in proper direction to see if jam has cleared. If jam has not cleared, find it and remove obstruction.
	(2) Belt tension	Refer to Belt Tension section on page 7.
	(3) Tail shaft	Check for loose or missing screws.
	(4) Side wings bent or missing	Repair or replace.
	(5) Cotter pin missing from link pin	Replace cotter pin.
	(6) Clutch adjustment	Refer to clutch adjustment sections on page 4.
	(7) Sludge and/or chip inside frame	Remove belt and clean.
Belt flutter	Incorrect belt tension	Refer to Belt Tensioning section on page 7.
Excessive wear on outside of side wings	(1) Belt misalignment	Look for sideward motion of belt caused by loose sprockets. If necessary open belt, align sprockets and retighten set screw.
	(2) Uneven side to side tension	Refer to Tensioning section on page 7.
	(3) Leveling	Check leveling of frame to insure it is not twisted. If necessary, adjust leveling screws located in foot until conveyor has correct leveling.
	(4) Chip jam inside frame	Remove belt and clean frame.
Motor overloads kick out excessively	(1) Loose connection	Check and tighten.
	(2) Undersized heater	Match full load amps on motor plate and replace heaters.
	(3) Sludge/Chip build-up inside frame	Remove belt and clean.
	(4) Defective gear reducer and/or motor	Replace as needed.

WARNING !

NEVER ATTEMPT TO CLEAR A JAMMED CONVEYOR WITHOUT FIRST TURNING OFF THE POWER TO THE CONVEYOR. NEVER USE HANDS TO CLEAR A JAM – USE A TOOL.

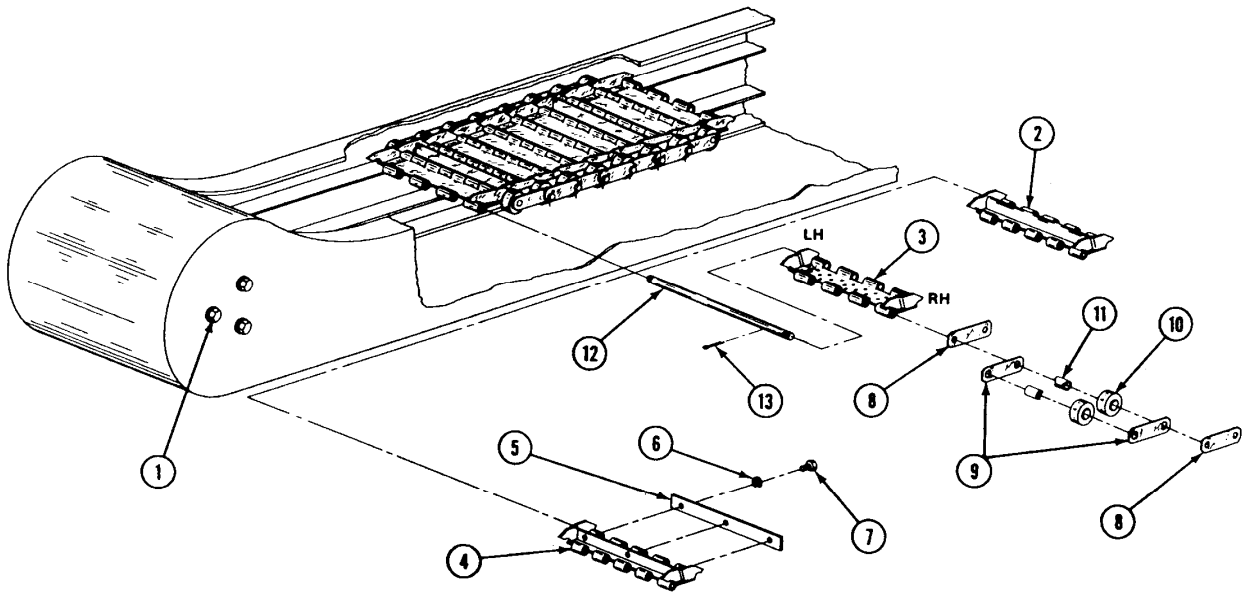
STANDARD AND HEAVY DUTY BELT



NOTE: Your conveyor may not appear exactly as shown here. However, the individual parts can be identified from these parts plates. (Follow ordering instructions.)

ITEM NO.	CATALOG NO.	PART NAME		ITEM NO.	CATALOG NO.	PART NAME
1	75B-3	Hex Head Screw		7	75B-11	Hex Head Screw
	75B-4	Lock washer		8	75B-90	Side Wing (Right Hand),
	75B-5	Idler (Tail Disc)				(Shown)
2	75B-6	Hinge Plate w/ Cleat			75B-91	Side Wing (Left Hand)
3	75B-7	Hinge Plate		9	75B-14	Roller
4	75B-8	Hinge Plate w/ Wiper Cleat		10	75B-108	Washer
5	75B-9	Wiper		11	75B-16	Link Pin
6	75B-10	Washer		12	75B-17	Cotter Pin

SUPER HEAVY DUTY BELT



NOTE: Your conveyor may not appear exactly as shown here. However, the individual parts can be identified from these parts plates. (Follow ordering instructions.)

ITEM NO.	CATALOG NO.	PART NAME		ITEM NO.	CATALOG NO.	PART NAME
1	75B-3	Hex Head Screw		6	75B-10	Washer
	75B-4	Lock washer		7	75B-11	Hex Head Screw
	75B-5	Idler (Tail Disc)		8	75B-12	Link Plate
2	75B-6	Hinge Plate w/ Cleat			75B-80	Roller Link Assembly
3	75B-7	Hinge Plate Assembly		9	*75B-13	Link Plate Roller Assembly
	*75B-71	Side Wing – Right Hand		10	*75B-14	Roller
	*75B-72	Side Wing – Left Hand		11	75B-15	Split Bushing
4	75B-8	Hinge Plate w/ Wiper Cleat		12	75B-16	Link Pin
5	75B-9	Wiper		13	75B-17	Cotter Pin

*** Part of the Above Assembly**

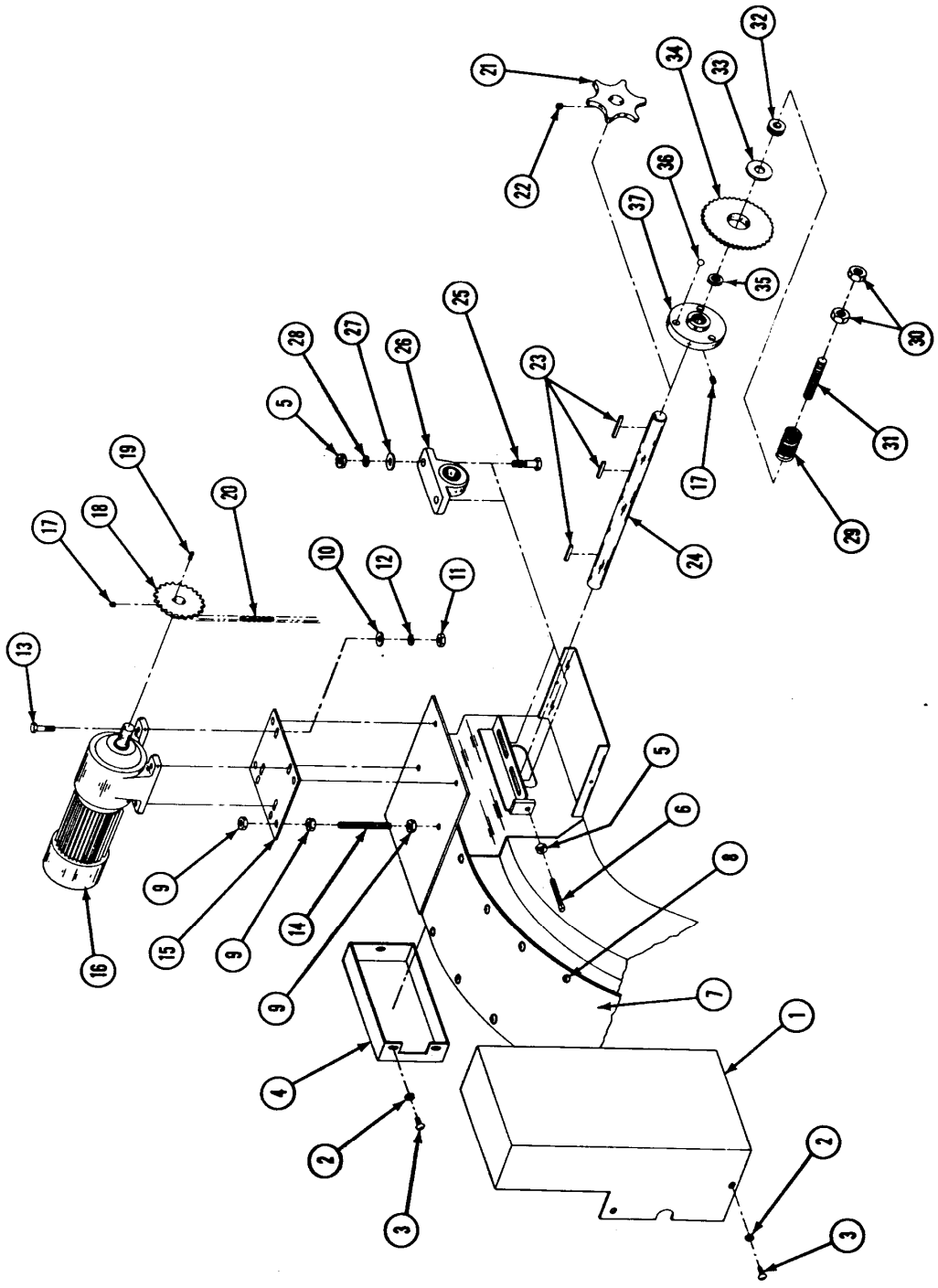
TOP MOUNT PARALLEL GEAR MOTOR

ITEM NO.	CATALOG NO.	PART NAME
1	75B-26	Drive cover
2	75B-60	Washer, flat, 1/2"
3	75B-61	Washer, lock, 1/2"
4	75B-29	Bearing safety cover
5	75B-30	Hex nut, .500-13
6	75B-31	Bearing adjusting screw, .500-13 x 4
7	75B-32	Top cover – incline
	75B-32A	Top cover – upper curve
8	75B-33	Button head cap screw, .250-.20 x .50
9	75B-73	Hex nut, .375-16
10	75B-34	Flat washer, 3/8"
11	75B-35	Hex nut, .375-16
12	75B-36	Washer, lock, 3/8"
13	75B-37	Hex head cap screw, .375-16 x 1.25"
14	75B-74	Motor support stud
15	75B-75	Motor adapter plate
16	75B-76	Parallel gearmotor (specify voltage)
17	75B-38	Setscrew, .375-16 x .375"
18	75B-39	Motor sprocket

ITEM NO.	CATALOG NO.	PART NAME
19	75B-77	Key, 1/4" x 1 1/2"
20	75B-40	Drive chain
21	75B-42	Sprocket
22	75B-43	Setscrew, .313-18 x .375
23	75B-44	Key, 1/4" x 1 1/2"
24	75B-45	Drive shaft
25	75B-55	Hex head cap screw, .500-13 x 2.00
26	75B-56	Pillow block bearing
27	75B-60	Washer, flat, 1/2"
28	75B-61	Washer, lock, 1/2"
	75A-20	Clutch assembly
29	*75A-29	Spring
30	*75A-30	Hex nut, .500-13/.750-16
31	*75A-31	Stud
32	*75A-32	Thrust bearing
33	*75A-33	Trust washer
34	*75A-34	Clutch sprocket
35	*75A-35	Threaded insert
36	*75A-36	Steel ball
37	*75A-50	Clutch body
38	75B-80	Motor mounting plate

* part of the above assembly

TOP MOUNT PARALLEL GEAR MOTOR



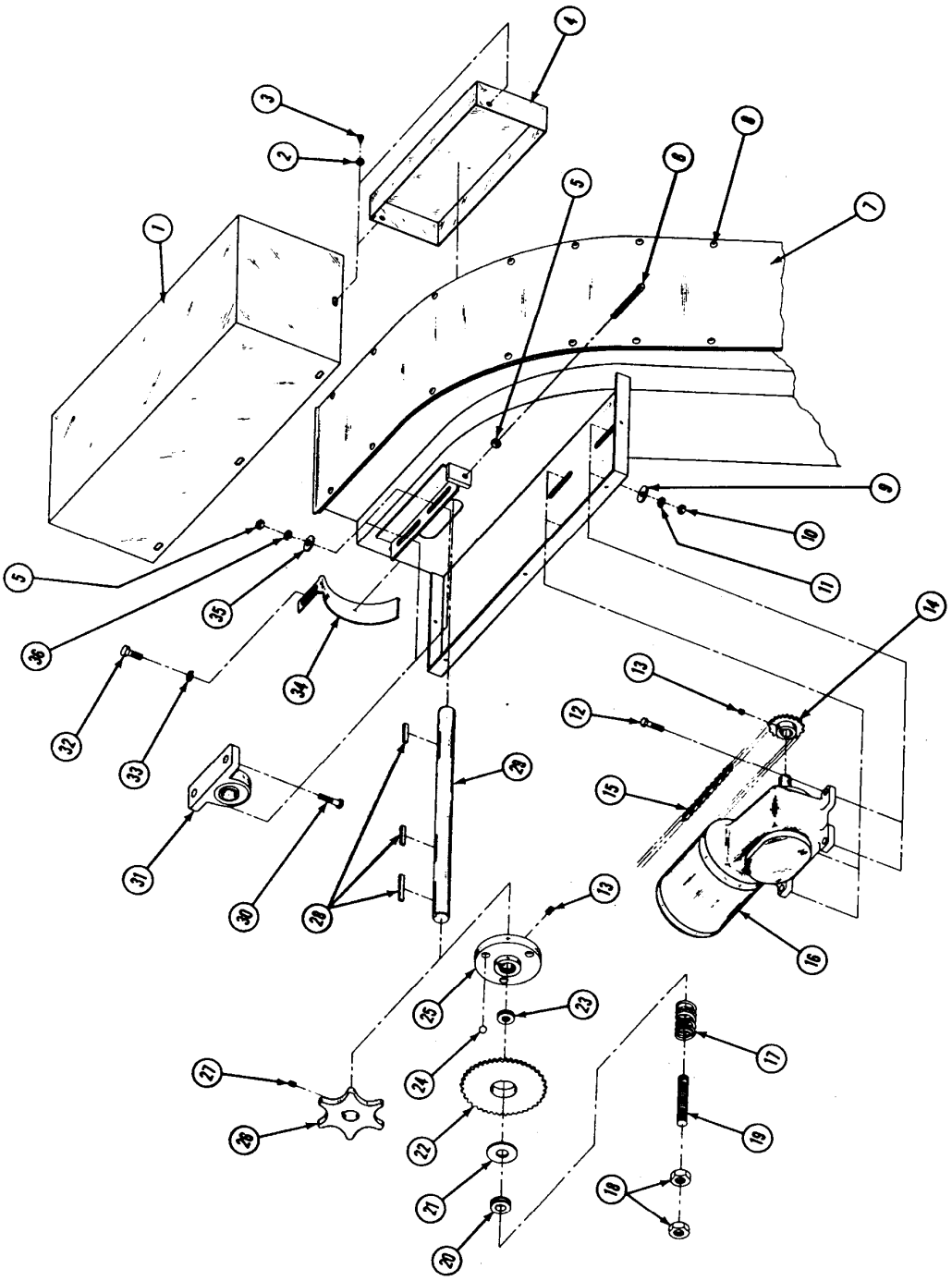
NOTE: Your conveyor may not appear exactly as shown here. However, the individual parts can be identified from these parts plates. (Follow ordering instructions.)

SIDE MOUNT RIGHT ANGLE GEAR MOTOR

ITEM NO.	CATALOG NO.	PART NAME
1	75B-26	Drive Cover
2	75B-27	Lockwasher
3	75B-28	Button Head Screw
4	75B-29	Bearing Safety Cover
5	75B-30	Hex Nut,
6	75B-31	Bearing Adjusting Screw
7	75B-32	Top Cover – Incline
	75B-32A	Top Cover – Upper Curve
8	75B-33	Screw, Button Head Cap
9	75B-34	Washer, Flat
10	75B-35	Hex Nut
11	75B-36	Lockwasher
12	75B-37	Screw, Hex Head Cap
13	75B-38	Setscrew
14	75B-39	Motor Sprocket
15	75B-40	Drive Chain
16	75B-41	Right Angle Gear motor (Specify Voltage)
	75A-20	Clutch Assembly
17	*75A-29	Spring
18	*75A-30	Hex Nut
19	*75A-31	Stud
20	*75A-32	Thrust Bearing
21	*75A-33	Thrust Washer
22	*75A-34	Clutch Sprocket
23	*75A-35	Threaded Insert
24	*75A-36	Steel Ball
25	*75A-50	Clutch Body
26	75B-42	Sprocket
27	75B-43	Setscrew
28	75B-44	Key
29	75B-45	Drive Shaft
30	75B-55	Screw, Hex Head Cap
31	75B-56	Pillow Block Bearing
32	75B-57	Screw, Hex Head Cap
33	75B-58	Lockwasher
34	75B-59	Roller guard
35	75B-60	Flat Washer
36	75B-61	Lockwasher

* Part of the Above Assembly

SIDE MOUNT RIGHT ANGLE GEAR MOTOR



NOTE: Your conveyor may not appear exactly as shown here. However, the individual parts can be identified from these parts plates. (Follow ordering instructions.)

CONVEYORS EQUIPPED WITH <u>OPTIONAL</u> AIR HEADER ASSEMBLIES

AIR HEADER OPERATION

All Microfine® conveyors with hinge belts are equipped with an air header assembly. This equipment is mounted under the belt, near the discharge end and directs multiple streams of compressed air onto the belt to dislodge small chips that might otherwise be carried back down into the conveyor frame. The pressure regulator should be set just high enough to clean the underside of the conveyor belt; usually around 8 to 10 PSI. Excessive air pressure does not increase the effectiveness of the air header. It only creates noise, wastes compressed air, increases coolant mist and can lead to coolant on the shop floor.

This option is especially effective for removing aluminum or any other light materials that have a tendency to adhere to the belt and are carried back into the conveyor frame. Once the chips are carried back into the frame they will be either collect in the bottom of the conveyor or be carried out of the conveyor through the drain openings. This can lead to excessive sump cleaning, possible additional maintenance on the conveyor or other components such as chip screens, baskets or pump filters.

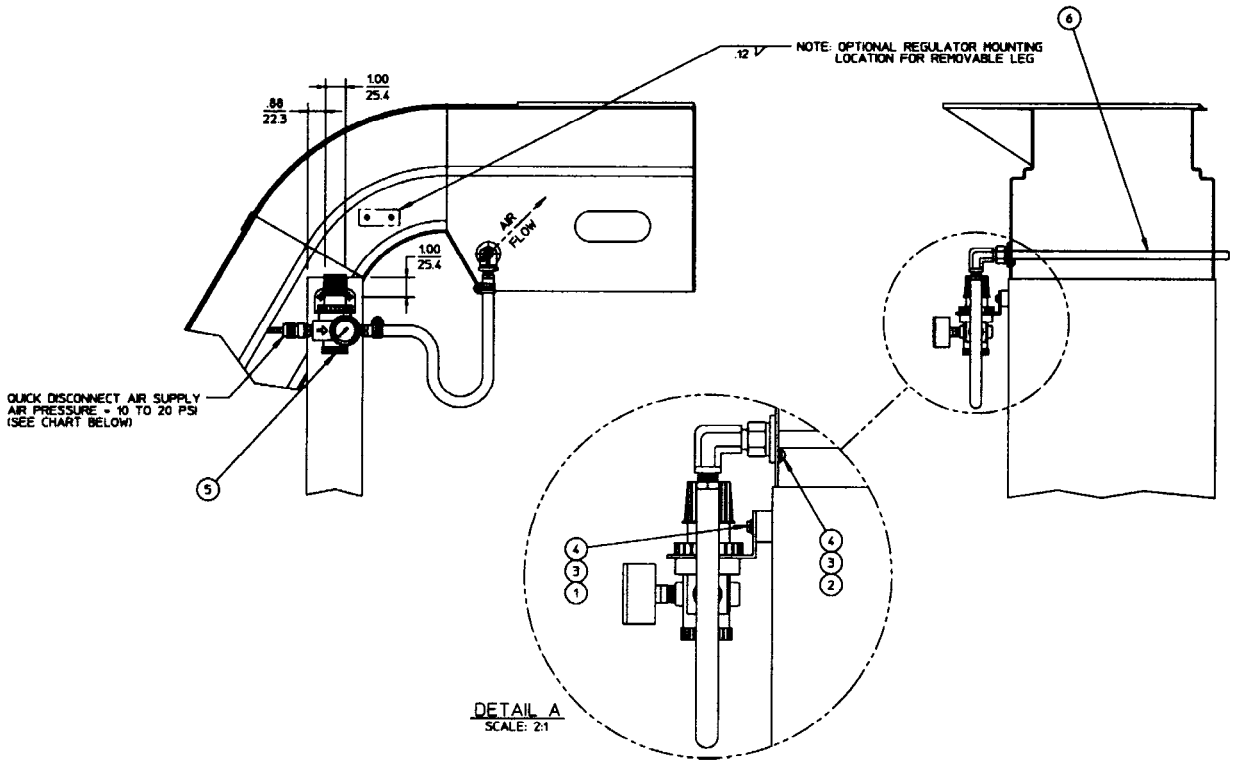
AIR HEADER INSTALLATION

This assembly ships loose with the conveyor. To assemble this unit, follow the following procedure:

1. Mount the regulator bracket to the conveyor side frame using the two hex head cap screws, lock washers and flat washer provided. There will be a block welded to the side frame of the conveyor for mounting this bracket when this option is ordered with the conveyor from the factory. If this option is ordered as a retrofit after the conveyor has already been in operation, it can be mounted to the conveyor leg by drill two mounting holes. **<u>Never drill holes in the conveyor frame!</u>** This can cause damage to the equipment.
2. Insert the air header manifold tube through mounting holes in the conveyor discharge and secure it with the button head screw, flat washer and lock washer provided. (Note: insert the screw from the inside of the conveyor discharge as shown below).
3. Connect the air hose provided to the air header input. The fitting on the end of the hose slides over the end of the air header manifold tube.
4. Connect the customer supplied shop air to the regulator input (quick connect male fitting supplied). See the chart below for the suggested air pressure setting. The suggested pressures vary depending upon the conveyor belt width. However, use the lowest pressure required that effectively removes the chips from the belt.

NOTE: If you have a problem with the operation or installation of this option, call the LNS' Service Department.

		AIR REQUIREMENT CHART (CFM)							
		BELT WIDTH (INCHES)							
		4	8	12	16	20	24	30	36
AIR PRESSURE (PSI)	10	1.5	2.9	4.2	5.6	6.4	8.7	11.6	13.8
	12	1.7	3.1	4.6	6.1	7.1	9.5	12.7	15.2
	14	1.8	3.4	5.0	6.6	7.6	10.3	13.7	16.4
	16	1.9	3.6	5.3	7.1	8.2	11.0	14.7	17.6
	18	2.1	3.9	5.7	7.5	8.7	11.7	15.6	18.6
	20	2.2	4.1	6.0	7.9	9.1	12.3	16.4	19.6



AIR HEADER ASSEMBLY

ELECTRICAL INFORMATION

LNS Chip Conveyors are supplied with a variety of drive packages and electrical controls, depending on conveyor application and customer preference. Only a qualified electrician or machine service technician should perform any maintenance, repairs or adjustments on this equipment**.**

WARNING!

ONLY QUALIFIED ELECTRICIAN OR SERVICEMAN SHOULD PERFORM ANY ELECTRICAL TROUBLESHOOTING OR MAINTENANCE TO THIS EQUIPMENT.

DO NOT PERFORM ANY MAINTENANCE, REPAIRS OR ADJUSTMENTS ON THIS EQUIPMENT WITHOUT FIRST LOCKING OUT ALL ELECTRICAL CONTROLS.

PERSONNEL SHOULD BE TRAINED IN OSHA COMPLIANT LOCK-OUT/TAG-OUT AND ELECTRICAL SAFETY PROCEDURES.

MAKE CERTAIN THAT THE POWER SUPPLY IS DISCONNECTED BEFORE ATTEMPTING TO SERVICE OR REMOVE ANY COMPONENTS!

AT NO TIMES SHOULD CIRCUIT CONTINUITY BE CHECKED BY SHORTING TERMINALS WITH A SCREWDRIVER OR OTHER METAL DEVICE.

NEVER SHOULD ADJUSTMENTS, MAINTENANCE OR CLEANING BE PREFORMED WITHOUT FOLLOWING PROPER SAFETY PROCEDURES IN ACCORDANCE WITH LOCAL, STATE AND NATIONAL SAFETY CODES.

Before making any electrical connections be certain the voltage for which the conveyor drive and control are wired is the same as incoming voltage being delivered by the electric power supply. Failure to do so may result in injury or damage to the equipment. It may be necessary in the cases where the motor has dual motor voltage ratings, for example 230/460V, 3 phase, for example, to change the motor wiring from one voltage to another. Normally a wiring diagram is located inside the motor terminal box, which indicates proper wiring for the incoming voltage supplied.

Some machines are equipped with internal electrical controls and a multi-pin type accessory plug for connecting the chip conveyor. LNS Chip Conveyors can be ordered with a mating plug, so that connecting the conveyor is as simple as plugging it in.

The best and most common source of power for the chip conveyor is the machine electrical cabinet. It is the customer's responsibilities at the time of order to determine what, if any, electrical components are present and/or order the appropriate conveyor control.

Even if the machine has no plug or other provision for connecting a chip conveyor, the conveyor should be ordered from LNS with both halves of a quick-disconnect style plug. One half will come pre-wired to the conveyor control cable. The other half of the plug will be wired to the machine electrical cabinet where it will be connected to the power supply. The chip conveyor can then be quickly unplugged for cleaning or service without having to disconnect "hard wired" connections.

Before starting the chip conveyor, check to be sure no tools, packing, or other material have been left on the belt or in the discharge opening, Start the conveyor and verify proper direction of belt travel. Reverse polarity if the belt is moving in the wrong direction. Check the rotation of the filter drum and backwash coolant pump. If either of these motors is running backwards, reverse the polarity. If the conveyor belt, filter drum or backwash pump runs backwards for an extended period of time it may result in the conveyor not operating effectively and/or cause damage to the conveyor.

TIME DELAY DEVICES

The use of a time delay device is prohibited on a Microfine® Conveyor or any other conveyor with built-in filters and is not suggested for use on any chip conveyor. If the chip conveyor is not running when the machine tool is cutting chips it may cause a large chip build up in the conveyor frame. When the conveyor is finally turned on it may not be able to handle the chip load. This condition may cause belt and/or frame damage to the chip conveyor. It is imperative that the Microfine® Conveyor is operating continuously whenever the machine tool is cutting chips. LNS will not be responsible for damage caused to chip conveyors when a time delay device is being used.

AC SUPPLY CIRCUIT AMP LOAD FOR CONVEYORS

Your LNS chip conveyor may be equipped with an AC motor and a variable speed AC inverter control unit. The full load amp draw of the AC drive is based on the horsepower of the AC motor, as well as the input AC voltage. The TURBO MICROFINE® model, is equipped with an AC drum drive motor and may be equipped with an optional AC backwash pump. These motors will place an additional load on the AC power supply circuit.

The conveyor motor control circuit is not separately fused. The customer must provide a circuit breaker or a fused disconnect switch on the power supply to the conveyor

It may be necessary to change a circuit protection device on the incoming power supply line to accommodate the higher full load amp draw. Refer to the following tables to determine the full load amp draw on the AC supply circuit:

CONVEYORS EQUIPPED WITH OPTIONAL 3 PHASE AC VARIABLE SPEED BELT DRIVE CONTROLLER

DANGER !

IMPROPER OPERATION OF THIS CONTROL MAY CAUSE INJURY TO PERSONNEL OR CONTROL FAILURE. THE CONTROL MUST BE OPERATED IN ACCORDANCE WITH LOCAL, STATE AND NATIONAL SAFETY CODES. ONLY A QUALIFIED ELECTRICIAN OR SERVICEMAN SHOULD PERFORM ANY ELECTRICAL TROUBLESHOOTING OR MAINTENANCE.

THE CONVEYOR CONTROL CIRCUIT IS NOT SEPARATELY FUSED. THE USER MUST PROVIDE EITHER A CIRCUIT BREAKER OR A FUSED DISCONNECT SWITCH ON THE INPUT AC LINE IN ACCORDANCE WITH ALL APPLICABLE ELECTRICAL CODES.

1.1 Description

The AC variable speed belt drive controller is a controller that uses an AC variable frequency inverter to adjust the belt speed of the conveyor by simply adjusting the SPEED CONTROL potentiometer which controls the inverter output frequency. The specifications are listed in Section 1.2. The trim pot and lick settings have been factory set for conveyor operation.

1.2 Specifications

H.P. (MAX)	AC INPUT VOLTAGE	AC OUTPUT VOLTAGE	MAX INPUT AMPS	MAX OUTPUT AMPS	KILOWATT (MAX)
1/2	208-230V, 1 Ph.	3.5-230V, 3 Ph.	1.8	2.2	0.37

Table 1.1

Overload capacity. . . . . 150% for 60 seconds
Starting torque. . . . . greater than 100%
Input frequency. . . . . 50/60 Hz
Phase imbalance (3ph. only) . . . . . +/- 2%
Operating temperature. . . . . 0 TO +40 C (NEMA4/12 models); 0 TO +50 C (chassis model)
Humidity. . . . . 90% RH or less, non-condensing
Vibration. . . . . 0.6 G maximum
Elevation. . . . . 1000 meters (3,300 feet) above sea level w/o derating
Frequency range. . . . . 0 to 50/60 Hz or 0 to 100/120 Hz
Operating controls. . . . . on-off switch, forward-brake-reverse switch, variable speed potentiometer

1.3 Protection Features

Ground fault. . . . . checked at start-up, optional full time
Short circuit. . . . . protected from damage
Motor overload. . . . . programmable inverse time overload trip
Overvoltage. . . . . protected from damage (500mS ride-through)
Undervoltage. . . . . protected from damage (200mS ride-through, load dependent)
Torque limit. . . . . full time four quadrant “trip-free” operation
Over temperature. . . . . protected from damage

2.1 Operation

The controller is designed for safe and convenient operation. All controls are mounted on the front cover; no access to the inside of the control enclosure is required.

The ON-OFF toggle switch controls the incoming line power to the inverter. It must be in the ON position for the conveyor to operate.

The FORWARD-BRAKE-REVERSE toggle switch determines the phase sequence to the motor and how the motor decelerates to a stop. This switch must be in either the Forward or Reverse position for the conveyor to operate.

The SPEED CONTROL potentiometer controls the inverter output frequency. The conveyor belt speed is varied from zero to maximum using this control.

3.1. Input AC Line Requirements

The allowable AC line voltage fluctuation for 208/230 volt controls is 208-230 VAC +/- 5%. A supply voltage above or below these limits can cause the inverter to trip out with either an overvoltage or an undervoltage fault.

Caution should be exercised when applying low line voltage to the inverter. The inverter in a 208/230 volt control will operate properly on a 208 VAC line; however, the maximum output voltage will be limited to 208 VAC. If the motor is rated for 230 VAC line voltage, higher motor currents and increased heating will result. The voltage rating of the motor should match the applied line voltage.

Phase voltage imbalance of the input AC source can cause unbalanced currents and excessive heat in the input rectifier diodes and in the DC bus capacitors of the inverter. Phase imbalance also can be damaging to motors running directly across the line.

Caution: Power-factor correction capacitors should not be used on the motor terminals. Damage to the inverter will result.

3.1 Single Phase Operation

The inverter is designed to accept single-phase input power. If single-phase operation becomes necessary, line terminals L1 and L2 are to be used. The output of the drive will always be three phase. **Do not connect single-phase motors to the inverter output terminals M1, M2 or M3**.

3.2 AC Line Protection

The inverter is able to withstand a 150% overload for 60 seconds. For applications with short intermittent loads over 100%, select a fuse or magnetic trip circuit breaker rated at a maximum of 1.5 times the input current rating of the drive (see the "AC Current Requirements" table below for the appropriate input current ratings). Minimum voltage rating for the protection device should be 250 VAC.

For maximum protection of the inverter, current-limiting fuses should be used. These fuses should provide 200,000 ampere RMS interrupting capacity and low I^2T values. Recommended fuses are Bussman FRN-R.

If the source of the AC power to the inverter is greater than 15kVA, an isolation transformer or line inductors are recommended.

AC CURRENT REQUIREMENTS

All Conveyors Except Microfine®

Voltage 3PH Line-Line	Belt Drive Type	Belt Drive Horsepower	Current per phase at Rated Load	Maximum Recommended Overload Relay Setting (150% x Rated Current)
230VAC	Fixed Speed	¼	0.84A	1.26A
460VAC	"	¼	0.42A	0.63A
230VAC	"	½	2.00A	3.00A
460VAC	"	½	1.00A	1.50A
230VAC	Variable Speed	¼	1.00A *	1.50A
460VAC	"	¼	0.50A *	0.75A
230VAC	"	½	2.38A *	3.57A
460VAC	"	½	1.19A *	1.79A

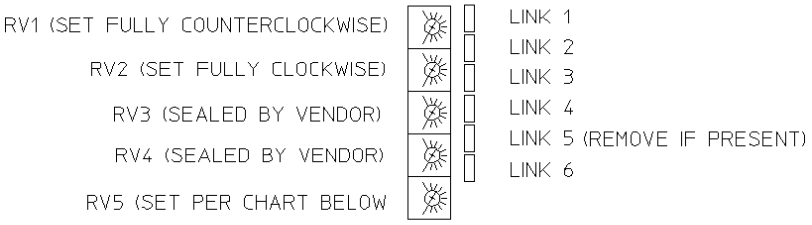
* 84% average inverter efficiency

Note: The variable speed control should not be used as an ON-OFF switch. Only the ON-OFF switch or the REV-STOP-FWD switch should be used to turn the conveyor motor on or off.

VARIABLE SPEED CONTROL SETUP INSTRUCTIONS (208/230 VOLT)

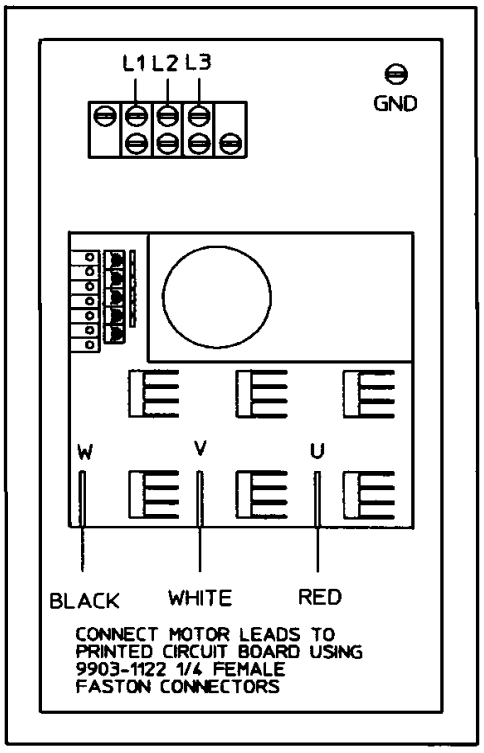
1. Connect Incoming Power Leads to the upper terminal strip as shown.
2. Connect motor leads with 9903-1122 ¼ Faston Connectors as shown.
3. Remove Link 5 if present.
4. Set trip pots RV1, RV2, and RV5 as shown.

TRIM POT AND LINK SETTINGS

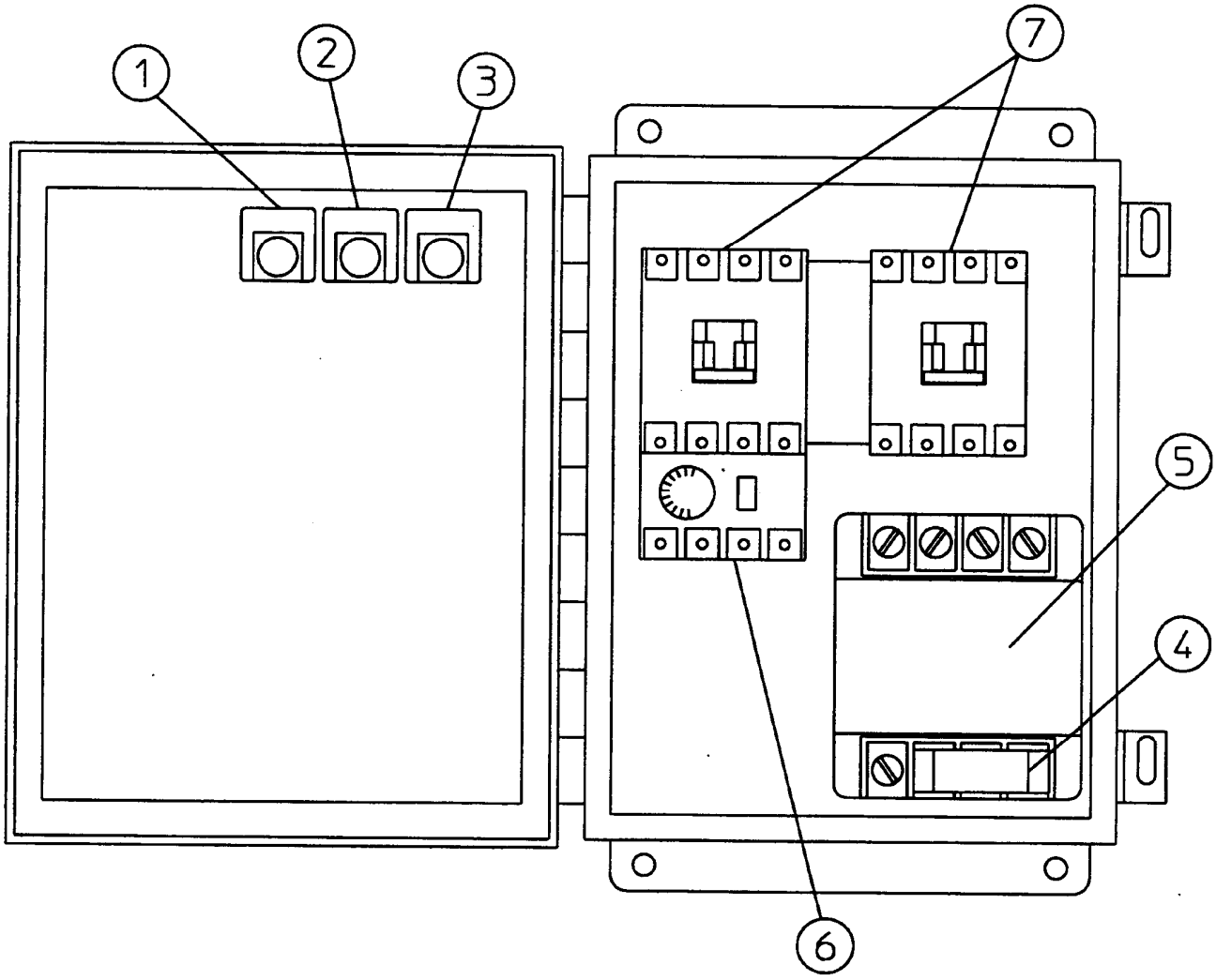


RV5 (CURRENT LIMIT) SETTING					
MOTOR	HP	VOLTAGE	AMP RATING	RV5 SETTING	
99881153	25	208/230	.84/.92	50 %	
99701046	.50	208/230	2.01/1.82	87.5 %	

POWER LEADS



STANDARD ELECTRICAL BOX (PARTS LIST)



ITEM NO.	CATALOG NO.	PART NAME
1	75A-100	Stop Push Button
2	75A-101	Reverse Push Button
3	75A-102	Forward Push Button
4	75A-103	Fuse (w/ Transformer Only)
5	75A-104	Transformer (optional)
6	75A-105	Overload Relay
7	75A-106	Magnetic Reversing Starter

NOTE: Your control may differ from the control panel shown. If so, contact LNS for service requirements.